L-20443-66 EWT(d)/FSS-2/EWT(1)/EEC(k)-2/EWA(d) SCTB AST/TT/DD/RD/GW

ACC NR: AP6007744 SOURCE CODE: UR/0293/66/004/001/0137/0143

AUTHOR: Belyayev, P. I.; Leonov, A. A.; Popov, V. A.; Khachatur'yants, L. S.; Filosofov, V. K.

ORG: none

TITLE: Some dynamic characteristics of the operator when tracking under Voskhod-2 spaceflight conditions

SOURCE: Kosmicheskiye issledovaniya, v. 4, no. 1, 1966, 137-143

TOPIC TAGS: man machine factor, psychophysiology/Voskhod 2

ABSTRACT: The study was designed to determine the effects of the entire complex of physical and psychophysiological factors of spaceflight on the Voskhod-2 crew. Four situations were considered: 1) Training under normal conditions; 2) activity in a spacecraft mockup; 3) activity on the launch date; 4) activity during the actual spaceflight. The reaction of Belyayev and Leonov to visual tracking regimens of various frequencies was monitored and the data was statistically processed by a computer. The mode of recording tracking activity is shown in Fig. 1. Using this system, it was possible to study the following operator characteristics: 1) the amplitude-frequency characteristic; 2) phase-frequency characteristic; 3) auto-correlation function; 4) cross-correlation function; 5) transition function and some other characteristics. The studies showed that the dynamic characteristics of

Card 1/2 UDC: 629.198.61

L 20443-66

ACC NR: AP6007744

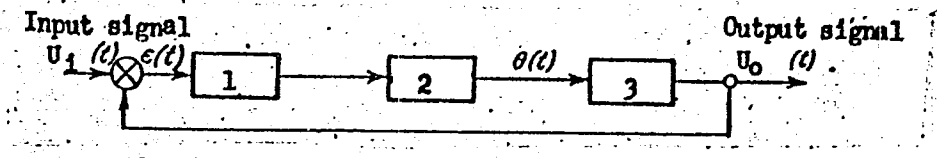


Fig. 1. Functional diagram of a tracking activity recorder

1 - Indicator; 2 - operator; 3 - object.

the Voskhod-2 crew did not undergo any drastic changes under the influence of the spaceflight. Even the 10 min EVA activity did not alter operator characteristics. There was also no significant change in operator reaction time. The data suggested that the duration of reliable work, which in the present study was maintained for nearly 13 min, is not altered. However, the study did show that operator activity concerned with incoming signals (frequency greater than 0.5 cps) was the most susceptible to spaceflight factors. It is felt that future, prolonged spaceflights will reveal how the stability of the cosmonaut who is acting as a vital link in a control system will change with respect to time, mission characteristics, and conditions. Orig. art. has: 6 figures and 1 table. [CD]

SUB CODE: 05, 06/ SUBM DATE: 28Jul65/ ORIG REF: 002/ OTH REF: 010/ ATD PRESS: 4222

Card 2/2 BK

KELDYSH, M.V., akademik; BELYAYEV, P.I., letchik-kosmonavt, podpolkovnik;
LEONOV, A.A., letchik-kosmonavt, podpolkovnik

Unprecedented scientific experiment in outer space, press conference on the new outstanding achievement of the Soviet people in mastering the outer space and the interview with the astronauts P.I. Beliaev and A.A. Leonov, who were the first to achieve the exit of man into space from the spaceship "Voskhod 2". Priroda 54 no.4:3-16 Ap '65.

(MIRA 18:5)

1. Prezident AN SSSR (for Keldysh). 2. Komandir korablya "Voskhod-2" (for Belyayev). 3. Vtoroy pilot korablya "Voskhod-2" (for Leonov).

TAKHTAYEV, Yu.B.; IVANOV, R.M.; LEONOV, A.F.; VARNAVSKIY, I.N.; IZOTOV, N.I.; MUSIKHINA, M.K.

Improved technology for the making of native alloy steel at the Orsk-Khalilovo Metallurgical Combine. [Sbor. trud.] Nauch.-issl.inst.met. no.4:82-90 '61. (MIRA 15:11)

1. Nauchno-issledovatel'skiy institut metallurgii (for Takhtayev, Ivanov). 2. Orsko-Khalilovskiy metallurgicheskiy kombinat (for Leonov, Varnavskiy, Izotov, Musikhina).
(Khalilovo—Steel—Metallurgy)

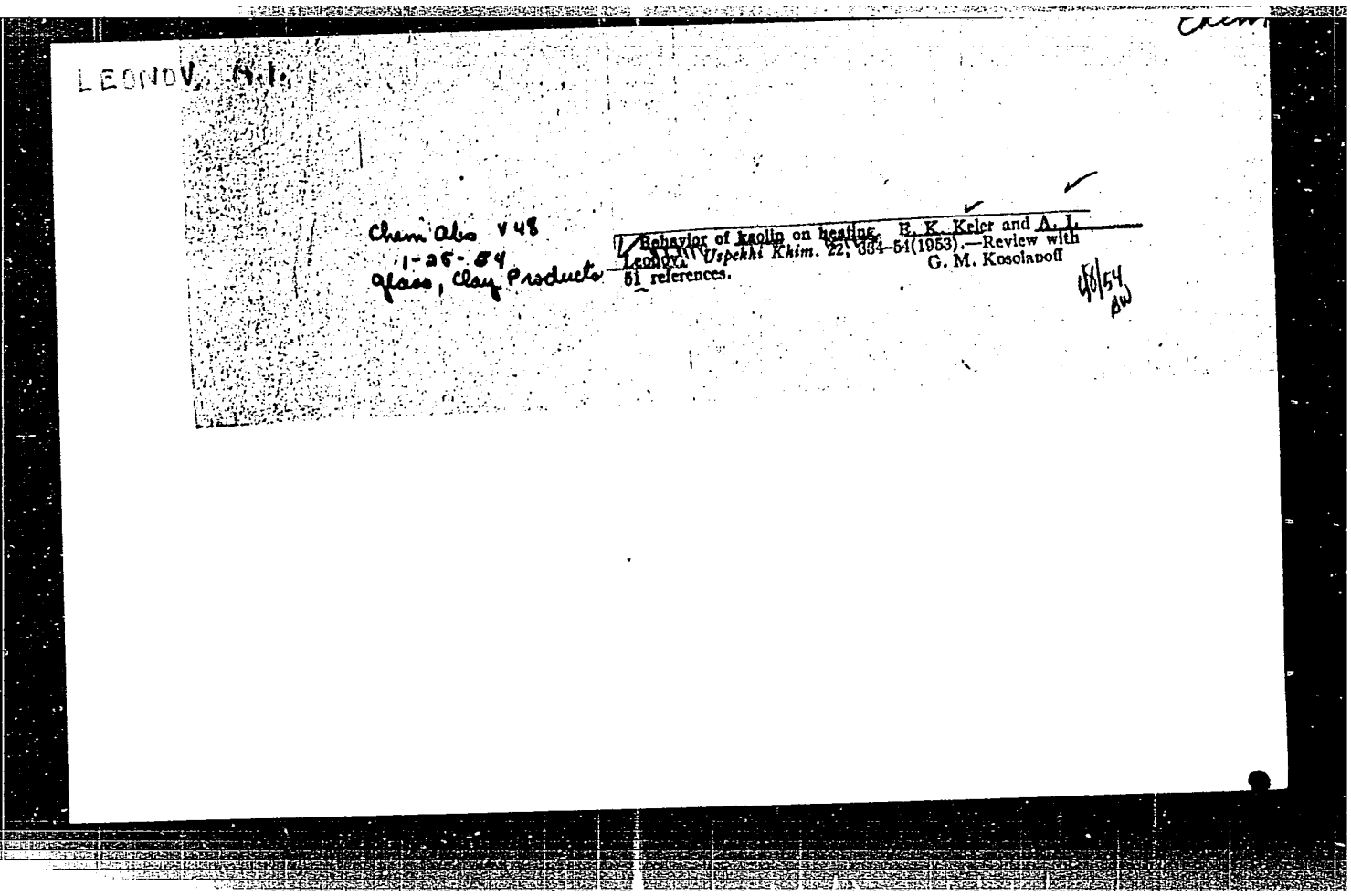
MURAV'YEV, K.N.; MALOFEYEV, P.R., inzhener, redaktor; LEONOV, A.G., inzhener, redaktor.

[Repair of metal cutting machines; technology and organization] Remont metallorezhushchikh stankov; Tekhnologiia i organizatsiia. Izd. 2-e, perer. i dop. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroitel'noi lit-ry, 1955. 304 p. (MIRA 8:4)
(Machine tools)

LAPIN, P.I.; KOMAROV, I.A.; LEONOV, A.G.; MAZURKEVICH, F.S.; MAKAROV, S.N.; MARTEM'YANOV, P.B.; MOSUNOVA, D.I. [deceased]; SAKHAROV, I.M.; SIDNEVA, S.V.; TSITSIN, N.V., akademik, otv.red.; MAKAROV, S.N., red.izd-va; GUSEVA, A.P., tekhn.red.

[Trees and shrubs; results obtained in the Main Botanical Garden of the Academy of Sciences of the U.S.S.R.] Derev'ia i kustarniki; kratkie itogi introduktsii v Glavnom botanicheskom sadu Akademii nauk SSSR. Moskva, Izd-vo Akad.nauk SSSR, 1959. 190 p. (MIRA 12:10)

1. Moscow. Glavnyy botanicheskiy sad. (Trees) (Shrubs)



LEONOV, N. I.

Chem Abs v48
1-25-54
Glass, Clay Products

Behavior of kaolin on heating. E. K. Keler and A. I. Leonov. *Uspekhi Khim.* 22, 384–54(1953).—Review with 61 references. G. M. Kosolapoff

4/8/54 BW

Leonov, A. I.

USSR

The existence of kaolinitic anhydride. E. K. Keler and A. I. Leonov. *Doklady Akad. Nauk S.S.S.R.* 91, 545–8 (1953).—From tests run on natural kaolin (I) and synthetic allophanoid (II) it was concluded that no dehydrated compd. of definite compn. corresponding to kaolinite anhydride existed. II, prepd. from $Al(NO_3)_3$ and Na silicate, with subsequent removal of Na_2O by electrodialysis showed differential soly. of the Al_2O_3 and SiO_2 constituents in an alk. soln. (5% NaOH + 5% K_2CO_3) (III). This difference decreased with the temp. to which II was heated, (up to 900°), suggesting a mech. screening effect assocd. with increased d. and decreased porosity. Similar explanations account for the behavior of I. Above 900°, alumina soly. in III falls rapidly because of recrystn. to form γ-Al_2O_3. C. H. Fuchsman

12
1

LEONOV, A. I.

USSR/Agriculture - Increased production

Card 1/1 : Pub. 123 - 7/17

Authors : Leonov, A. I.

Title : The urgent tasks of the Council for the Study of the Productive Forces of the Kazakh SSR

Periodical : Vest. AN Kaz. SSR 11/1, 69-76, Jan 1954

Abstract : An exhortatory article urging all socialistic agencies for agricultural production not to lag behind socialized industry.

Institution : ...

Submitted : ...

LEONOV, A.I.

The role of dissociation activation in the agglomeration of the oxides of elements with variable valencies. Izv.AN SSSR. Otd. khim.nauk no.5:805-808 S-O '55. (MLRA 9:1)

1.Institut khimii silikatov Akademii nauk SSSR.
(Oxides)

LEONOV, A. I.

USSR/ Chemistry - Chemical technology

Card 1/1 Pub. 22 - 37/51

Authors : Keler, E. K., and Leonov, A. I.

Title : Effect of admixtures in kaolin on the processes occurring in it during heating

Periodical : Dok. AN SSSR 101/1, 137-139, Mar 1, 1955

Abstract : Roentgenographic tests were conducted to determine the effect of oxide admixtures in kaolin ($Al_2O_3 \cdot 2H_2O \cdot 2SiO_2$) on the endothermal processes occurring in the mineral during heating. Results showed that FeO, CaO and MgO existing in all kaolins and clays in the role of admixtures considerably affect the chemical and phase conversion processes of the minerals. The possibility of controlling these processes is discussed. Five references: 2 USSR, 1 German, 1 English and 1 USA (1935-1953). Graphs.

Institution : Acad. of Sc., USSR, Institute of the Chemistry of Silicates

Presented by : Academician G. G. Urazov, October 4, 1954

SOV/131-59-5-6/12

15 (2)
AUTHORS: Keler, E. K., Leonov, A. I.

TITLE: Inflation of Iron Oxide and Its Compounds in Heating (O yavlenivakh razbukhaniya okisi zheleza i yeye soyedineniy pri nagrevanii)

PERIODICAL: Ogneupory, 1959, Nr 5, pp 225-231 (USSR)

ABSTRACT: In this article, the authors report on the results of investigation of the inflation of iron oxides, mixtures of iron and chromium oxides, as well as copper- and cobalt oxides, at heating in different gases. The shrinking and stretching of the samples in heating was measured by means of the corundum dilatometer (Fig 1) which is subsequently described. Figure 2 shows the change in length of the sample of iron oxide at heating in air, and figure 3 shows the microphotographs of the samples. Figure 4 represents the influence of the oxygen pressure on the linear changes of the samples of iron oxide at 1300°, and figure 5 shows that of a sample of copper oxide in heating to 900°. Figure 6 represents the influence of the oxygen pressure on the stretching of the sample of cobalt oxide in heating to 850° in air. The partial pressure of the oxygen was varied by an addition of argon.

Card 1/3

Inflation of Iron Oxide and Its Compounds in Heating

[illegible]/151-59-3-9/12

Heating tests of samples with the molecular composition Fe_2O_3 : Cr_2O_3 = 1 : 2 were carried out; they were inflated in argon, and shrank in air (Fig 7). Figure 8 shows the stretching of various samples at heating in air, and figure 9 in carbon dioxide and hydrogen. The table indicates the influence of the TiO_2 admixtures on the inflation of the mixtures Fe_2O_3 - Cr_2O_3. Conclusions: Inflations, cracks and loss of strength can be observed at the heating of samples of pure oxides and certain mixtures at certain temperatures. An admixture of 10 % TiO_2 to the mixtures Fe_2O_3 : Cr_2O_3 at the ratios of 1:1 and 1:2 fully eliminates their inflation at heating in air up to 1800°. Further investigations of the influence of TiO_2 admixtures on the properties of refractory chrome-magnesite products are recommended. There are 9 figures, 1 table, and 8 references, 4 of which are Soviet.

Card 2/3

Inflation of Iron Oxide and Its Compounds in Heating SOV/131-59-5-8/12

ASSOCIATION: Institut khimii silikatov AN SSSR (Institute of Silicate Chemistry of the AS USSR)

Card 3/3

5.2630

77058
SOV/62-59-12-2/43

AUTHOR: Leonov, A. I.

TITLE: Effect of the Gaseous Medium Upon Caking and Collecting Recrystallization of Oxides at High Temperatures

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1959, Nr 12, pp 2073-2079 (USSR)

ABSTRACT: The author studied caking of silicon dioxide and caking and recrystallization of titanium, magnesium, chromium, and aluminum oxides, in various gaseous media (air, argon, carbon dioxide, and hydrogen) at different oxygen pressures and temperatures. Below 1,500°, the samples (oxide powders, compressed into 30 x 7 x 3 mm prisms)were heated in tubular platinum furnace; above 1,500°, in a molybdenum furnace, represented in Fig. 3. The numbers in Fig. 3 designate: (1) the sample placed on the sample support; (2 and 4) corundum

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Effect of the Gaseous Medium Upon Caking and Collecting Recrystallization of Oxides at High Temperatures

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SOV/62-59-12-2/43

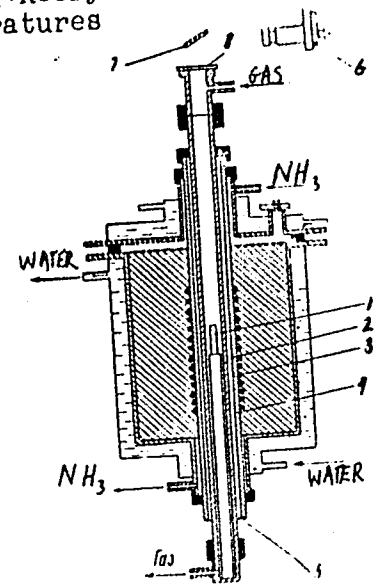

Fig. 3. Molybdenum high-temperature furnace.

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Effect of the Gaseous Medium Upon Caking and Collecting Recrystallization of Oxides at High Temperatures

tubes; (3) molybdenum heater (kept in an ammonia atmosphere under pressure) placed into (5) the space between two corundum tubes; (6) optical pyrometer; (7) mirror; (8) sighting glass. Sample caking was characterized by the magnitude of linear shrinkage (expressed in %). Crystal size (as a measure of the extent of recrystallization) was measured with a metallographic microscope. Phase composition was found by X-ray and microscopic analysis. Experimental results have shown that: dissociation activation of the caking and recrystallization of oxides at a high temperature has an appreciable magnitude only when the dissociation pressure of the oxides becomes commensurable with the partial pressure of oxygen in air. Of the oxides investigated by the author, only titanium oxide was shown to dissociate according to the equation: $2TiO_2 \rightarrow Ti_2O_3 + 1/2\ O_2$, markedly increasing in an inert and especially in a reducing atmosphere. Its dissociation

pressure at 1,400° is $4.5 \cdot 10^{-3}$ atm, compared to the partial pressure of oxygen in air, $p_{O_2} = 2.5 \cdot 10^{-1}$ atm (and in argon, $4 \cdot 10^{-3}$ atm). Oxides: Fe_2O_3, Mn_2O_3, Co_3O_4, Ni_2O_3 would behave in the same way in the temperature interval 1,000-1,700°, due to their high dissociation pressures. Aluminum and silicon oxides caked in air and in an inert atmosphere (argon, containing 0.4% O_2) to an equal extent (dissociation pressures of SiO_2 and Al_2O_3 at 1,400-1,500° are $5.6 \cdot 10^{-18}$ and $8.9 \cdot 10^{-22}$ atm, respectively). Alumina crystals, heated in air, argon, and hydrogen, were of the same size. Caking and recrystallization of magnesium and chromium oxides increased greatly only in a hydrogen atmosphere (p_{O_2} of hydrogen, containing 0.013% H_2O

Effect of the Gaseous Medium Upon Caking and Collecting Recrystallization of Oxides at High Temperatures

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is $3.28 \cdot 10^{-15}$ atm at 1,750°, while the dissociation pressures of MgO and Cr_2O_3 at that temperature are $1.4 \cdot 10^{-7}$ and $1.5 \cdot 10^{-10}$ atm, respectively). There are 7 figures; 6 tables; and 19 references, 7 Soviet, 1 French, 4 German, 6 U.K., 1 U.S. The 5 most recent U.K. and U.S. references are: J. White, Trans. Brit. Ceram. Soc., 56, 553 (1957); J. A. Hedvall, J. Soc. Glass Technology, 40, N 196, 405 (1956); H. P. Tripp, B. W. King, J. Amer. Ceram. Soc., 38, N 12, 432-437 (1955); R. G. Richards, J. White, Trans. Brit. Ceram. Soc., 53, N 7, 432 (1954); P. W. Klark, J. White, Trans. Brit. Ceram. Soc., 49, N 7, 305-325 (1950).

ASSOCIATION: Institute of Silicate Chemistry of the Academy of Sciences, USSR (Institut khimii silikatov Akademii nauk SSSR)

SUBMITTED: April 2, 1958

Card 5/5

LEONOV, A.I.

report presented at the 1st All-Union Congress of Theoretical and Applied Mechanics,
Moscow, 27 Jan - 3 Feb '60.

168. S. D. Leites (Dnepropetrovsk): On space buckling of columns
in the elastic-plastic range.

169. V. S. Lenskii (Moscow): Vibro-creep at room temperature.

170. V. S. Lenskii (Moscow): Plasticity of metals under combined
loading.

171. A. I. Leonov (Moscow): Some problems of non-stationary flow
of an incompressible visco-elastic (Maxwellian) liquid.

172. A. I. Leonov, M. D. Rusinov (Moscow): Some problems of quasi-
steady flow of an incompressible visco-elastic (Maxwellian)
liquid.

173. M. Ia. Leonov (Lvov): The generalization of the torsion theory
of thin-walled bars.

174. M. Ia. Leonov, V. V. Panasyuk (Lvov): The development of
microcracks.

175. Yu. R. Lepik (Tartu): Plastic flow of circular plates under
tension and bending of compression and bending.

176. S. G. Lekhnitskiy (Leningrad): Torsion of an anisotropic
curved bar.

177. A. D. Lizarev (Sverdlovsk): Free vibrations and stability of
ordinary and prestressed elastic restrained beams.

178. A Lisowski (Krakow): Displacement of rocks due to excavation
of sloping layers.

179. N. V. Litvinov (Kiev): On the application of matrix trans-
formations to the solution of large sets of linear equations
of elasticity theory.

180. O. I. Lotkin (Tomsk): The selection of [illegible] parameters
for structures of equal stability consisting of plates and
stringers.

181. P. A. Lukash (Moscow): Large deflections of shallow shells
of non-linear elastic materials.

182. Ia. B. Lvin (Voronezh): Methods for the solution of the
problems of axisymmetric states of stress in shells of revolu-
tion.

183. R. A. Malakhovskii (Gomel): Analysis of an orthotropic
circular conical shell under an arbitrary load applied to a
ring.

184. A. V. Malashenko (Kiev): On the experimental study of strains
in plates and shells.

185. N. I. Malinin (Novosibirsk): Creep strains and ruptures of
high polymers.

186. R. L. Malkina (Sverdlovsk): Vibrations of non circular
cylindrical shells.

187. A. K. Malmeister (Riga): Some problems of combined loading
of quasi-isotropic bodies.

188. K. A. Maltsov (Leningrad): The influence of structural
discontinuity in concrete on its strength.

189. S. O. Mamedova (Baku): Investigation of the state of stress
in a square prism with coaxial cylindrical hole under internal
pressure.

190. G. F. Mandzhavidze (Tbilisi): Solving the plane elastic
problem for anisotropic bodies by reduction to the problem
of linear coupling with "displacements".

191. L. I. Manevich, Yu. A. Shevliakov (Dnepropetrovsk): The
stability of a cylindrical shell in bending.

192. V. M. Marchenko (Moscow): Stress and strain in naturally
twisted bars.

193. V. I. Makhovikov (Taranchka): The problems of conformal
transformation and plane elasticity for the exterior of an
infinite number of holes.

194. Ia. A. Macheret (Moscow): The design of finite and infinite
beams on elastic foundation including time effects and without
adopting the hypothesis of Zimmerman and Winkler.

195. A. S. Mal'[illegible]kovatskii (Stalino): Vibrations of a curved bar
in an elastic medium and on elastic supports.

196. S. R. Mestaian (Erevan): An experimental study of basic
creep laws for soils.

197. G. S. Migirenko (Novosibirsk): On statically equivalent
loadings.

198. M. Sh. Mikeladze (Tbilisi): Contribution to the theory of
plastic shells of uniform strength.

199. R. S. Minasian (Erevan): On the bending of a simply
supported parallelogram plate.

200. N. V. Mikhailov (Moscow): Evaluation of the rheological
properties of elastic, visco-plastic materials in homogeneous
strain-rate under constant shearing stress.

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87117

S/062/60/000/009/001/021
B023/B064

15.2210 1136, 1155, 1043

AUTHOR: Leonov, A. I.

TITLE: Effect of the Gas Medium on the Course of the Physicochemical Processes in Semiconductor Oxides at High Temperatures

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1960, No. 9, pp. 1529-1534

TEXT: The author discusses his studies of the reactivity of the oxides ZnO and Cr_2O_3 as a function of the partial pressure of oxygen in the gas medium. Air, argon, hydrogen, and metal vapors served as media. In the reaction of $ZnO + Al_2O_3 = ZnAl_2O_4$, the formation of $ZnAl_2O_4$ at temperatures of 900-1000° in pure argon and in zinc vapors was twice as intensive as in argon with 0.4% oxygen (Table 2). Reaction $MgO + Cr_2O_3 = MgCr_2O_4$. Table 3 shows that at 950° and 1000°C and an increase of the oxygen concentration in the gaseous phase the amount of the resulting $MgCr_2O_4$ increases. At 1350° and a reduction of the partial pressure of oxygen

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B023/B064

Effect of the Gas Medium on the Course of the Physicochemical Processes in Semiconductor Oxides at High Temperatures

from $2.1 \cdot 10^{-1}$ atm to $4 \cdot 10^{-3}$ atm (Ar + 0.4% O_2), the amount of $MgCr_2O_4$ decreases from 82.5 to 51.7%. This is due to the desorption of superstoichiometric oxygen. A further decrease of the oxygen pressure to $\sim 10^{-13}$ atm (hydrogen) led to an increase of the magnesium chromite yield to 85%. At a higher temperature (1350°) chromium oxide dissociates in hydrogen: $Cr_2O_3 = 2Cr + 1.5\ O_2$ and, consequently, part of the oxygen goes over into the gaseous phase and an excess of chromium atoms forms in the solid oxide. At a temperature rise, the dissociation activation becomes still clearer (Table 3). In samples burned in the air, no crystals were found, and samples were covered with pores of minute size. The samples burned in argon, were coarse-crystalline, the size of the crystals was up to 50μ. Hence, it is clear that the physicochemical processes can be activated in the oxides at high temperatures, if the oxygen pressure in the gaseous phase is changed. The experimental data on the reaction kinetics and the sintering of the oxides are compared with the data on the catalytic and electrical properties of oxides. The reactivity of zinc

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Effect of the Gas Medium on the Course of the Physicochemical Processes in Semiconductor Oxides at High Temperatures

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oxide, its electrical conductivity, and the catalytic activity of zinc oxide depend on the composition of the gaseous medium. An explanation of these data is given in the paper of I. A. Myas'nikov and S. Ya. Pshezhetskiy (Ref. 14). For chromium oxide it is found that the electrical conductivity as well as the amount of $MgCr_2O_4$ forming during the reaction, depend on the oxygen pressure. The reactivity and the electrical conductivity of Cr_2O_3 change in the same sense. At higher temperatures, the dependence is inverse: reactivity (Table 3), sintering (Table 4), and the recrystallization of chromium oxide increase with decreasing oxygen partial pressure in the gaseous phase. The author assumes that the electrical conductivity of Cr_2O_3 depends at high temperatures (1350-1750°C) just as much on the oxygen concentration as does the reactivity of chromium oxide. Finally, samples of titanium dioxide were heated up to 1350 and 1550°C and left standing at this temperature for 2 h. The samples were burned in the air and in argon. At 1350°C, linear shrinkage of the samples amounted to 18.2% in the air, and 20.7% in argon. Recrystallization was more intensive

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in argon than in air. At a deviation from the stoichiometric composition of titanium oxide, combustion processes and re-crystallization are intensified and electrical conductivity is increased. In conclusion, the author states that the kinetics of the investigated physicochemical processes is due to the deviation of the composition of the semiconductor oxides from the stoichiometric conditions. This is in turn due to the dissociation of the oxides or to the adsorption of oxygen by oxides. There are 5 figures, 4 tables, and 17 references: 7 Soviet, 4 British, 4 German, and 1 US.

ASSOCIATION: Institut khimii silikatov Akademii nauk SSSR (Institute of Silicate Chemistry of the Academy of Sciences USSR)

SUBMITTED: May 13, 1959

Card 4/4

LEONOV, A.I. (Moskva)

Nonstationary flow of the noncompressible Maxwellian fluid through a gap between two unlimited parallel planes. Izv.AN SSSR.Otd.tekh.nauk. Mekh.i mashinostr. no.3:58-67 My-Je '61. (MIRA 14:6)
(Fluid dynamics)

LEONOV, A.I.

Catalytic action of water on chemical reactions between oxides at high temperatures. Izv. AN SSSR. Otd.khim.nauk no.8:1411-1416 Ag '61. (MIRA 14:8)

1. Institut khimii silikatov AN SSSR.
(Oxides) (Water) (Catalysis)

29514
S/062/61/000/011/001/012
B119/B138

15.2220

AUTHORS: Leonov, A. I., Rudenko, V. S., and Keler, E. K.

TITLE: Reaction between Ce_2O_3 and SiO_2 at high temperatures

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh nauk, no. 11, 1961, 1925-1933

TEXT: Silicates of trivalent Ce were synthesized in a hydrogen atmosphere, as Ce_2O_3 is unstable in an oxygen-containing atmosphere. 99.1% CeO_2 and analytically-pure SiO_2 were made to react between 1200 and 1650°C in the molecular ratios Ce_2O_3:SiO_2 = 2:1, 1:1, 2:3, 1:2, 1:4, and 1:8. The calcined products were analyzed by the X-ray diffraction method. The Ce_2O_3 X-ray diffraction pattern was interpreted on the basis of data by B. F. Ormont (Ref. 5: Struktura neorganicheskikh veshchestv. (Structure of Inorganic Substances) M.-L., 1950, str. 455). The refractive index, dielectric constant, dielectric loss (these two measured by I. S. Yanchevskaya),

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S/062/61/000/011/001/012
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and specific weight were also determined. To identify the products yielded, they were oxidized by heating in air and their oxygen absorption was gravimetrically determined. (The individual Ce^{III} silicates have different decomposition temperatures on heating in air.) Results: The compounds $Ce_2O_3 \cdot SiO_2$, $2\ Ce_2O_3 \cdot 3\ SiO_2$, and $Ce_2O_3 \cdot 2\ SiO_2$ could be proved. Crystalline $Ce_2O_3 \cdot 2\ SiO_2$ was obtained from an initial mixture of $1\ Ce_2O_3 + 2\ SiO_2$. $Ce_2O_3 \cdot SiO_2$ and $2\ Ce_2O_3 \cdot 3\ SiO_2$ are unstable and could not be obtained from their stoichiometric initial mixtures in a purely-crystalline phase. The decomposition temperatures in air are between 300 and 500°C for $Ce_2O_3 \cdot SiO_2$, between 600 and 700°C for $2\ Ce_2O_3 \cdot 3\ SiO_2$, and at 900°C for $Ce_2O_3 \cdot 2\ SiO_2$.

Among others, papers by N. A. Toropov and I. A. Bondar' (Ref. 1: Izv. AN SSSR, Otd. khim. n. 1959, 554) and I. A. Bondar' (Ref. 1: Sb. "Khimiya i prakticheskoye primeneniye silikatov", L., 1960, str. 5-9) are mentioned. There are 6 figures, 8 tables, and 5 references: 2 Soviet and 3 non-Soviet. The two references to English-language publications read as follows:

Card 2/3

LEONOV, A.I. (Leningrad)

Part played by the activated transition state in chemical kinetics.
Zhur.fiz.khim. 35 no.10:2328-2334 O '61. (MIRA 14:11)

1. Akademiya nauk SSSR, Institut khimii silikatov.
(Chemical reaction, Rate of) (Phase rule and equilibrium)

S/030/62/000/003/003/007
B116/B104

24.3300 (1051, 1057, 1163)

AUTHORS: Toropov, N. A., Keler, E. K., Leonov, A. I., Rumyantsev, P. F.

TITLE: High-temperature microscope

PERIODICAL: Akademiya nauk SSSR. Vestnik, no. 3, 1962, 46-48

TEXT: A high-temperature microscope developed at the Institut khimii silikatov Akademii nauk SSSR (Institute of Silicate Chemistry of the Academy of Sciences USSR) is described. Its main components are: the МП-3 (MP-3) polarizing microscope, a high-temperature chamber attached to the microscope stage, and a lamp. The heater 1 (Fig. 1) in the chamber is controlled by the economy transformer 2 (2 a) and the step-down transformer 3 (220/6 v). The lamp 6 is controlled by the economy transformer 7 (2 a, 220/127 v). The temperature is measured by the Pt-Rh thermocouple 8 and the potentiometer 9. The temperature of microobjects can also be determined by measuring the voltage at the heater. The microscope features microtelephoto lenses with an operating distance of about 14 mm. Maximum magnification is 240. Melting, crystallization, and polymorphous conversions of crystalline substances can be observed at high temperature in the

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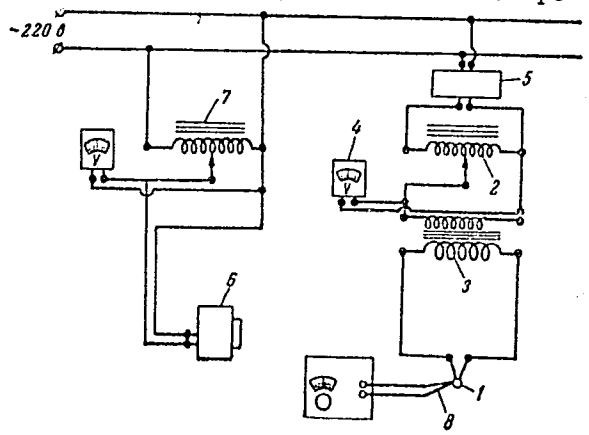
High-temperature microscope

S/030/62/000/003/003/007
B116/B104

transmitted polarized light and in the reflected light. The wetting of metals with nonmetallic liquids can be studied. Experiments can be conducted in oxidizing, inert, and reducing gas media. There are 4 figures.

Fig. 1. Circuit diagram of the high-temperature microscope.



Card 2/2

S/179/62/000/006/009/022
E032/E114

AUTHOR: Leonov, A.I. (Moscow)

TITLE: Steady state flow of a viscous medium in a plane and a circular duct of finite length

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye tekhnicheskikh nauk. Mekhanika i mashinostroyeniye, no.6, 1962, 56-64

TEXT: The axially symmetric flow of an incompressible viscous liquid in a circular tube of radius a and length L ($\delta = a/L \ll 1$) is discussed. The equations of motion are assumed to be of the form:

a) circular duct

$$v_z \frac{\partial v_z}{\partial z} + v_r \frac{\partial v_z}{\partial r} = -\frac{1}{\rho}\frac{\partial p}{\partial z} + \nu \Delta v_z \qquad (1.3)$$

$$\frac{\partial p}{\partial r} = \mu \frac{\partial}{\partial r}\frac{1}{r}\frac{\partial}{\partial r}(rv_r), \qquad \frac{\partial v_z}{\partial z} + \frac{1}{r}\frac{\partial}{\partial r}(rv_r) = 0$$

Card 1/3

and b) plane duct

$$v_x \frac{\partial v_x}{\partial x} + v_y \frac{\partial v_x}{\partial y} = -\frac{1}{\rho}\frac{\partial p}{\partial x} + \nu \Delta v_x$$

$$\frac{\partial p}{\partial y} = \mu \frac{\partial^2 v}{\partial y^2}, \qquad \frac{\partial v_x}{\partial x} + \frac{\partial v_y}{\partial y} = 0 \qquad (1.4)$$

General solutions are obtained for these equations. Two special cases are then considered, namely flow at very small Reynolds numbers and flow in a semi-infinite cylinder. It is shown that in the latter case the length of the entrance region is given by

$$\ell_o \approx \frac{5.92a}{\sqrt{\beta_1^2 + R^2/4} - R/2}; \qquad (3.6)$$

where R - Reynolds number, and $\beta_1 = 5.135$.
When the Reynolds number is very large ($R > 100$) then $\ell_o \approx 0.16 R_o a$ where $R_o = Ua/\nu$, which is the same as the result obtained by
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Steady state flow of a viscous ... S/179/62/000/006/009/022
E032/E114

S.M. Targ [Osnovnyye zadachi teorii laminarnykh techeniy, Gostekhizdat 1961 (Fundamental problems in the theory of laminar flow)].

The above formula for ℓ_o holds to within 5%. An application of the analysis to a problem encountered in the manufacture of man-made fibres and thin films in cylindrical extrusion nozzles is discussed.

SUBMITTED: May 24, 1962

Card 3/3

S/062/62/000/011/001/021
B101/B144

AUTHORS: Leonov, A. I., and Keler, E. K.

TITLE: High-temperature reactions between Ce_2O_3 and Al_2O_3, and properties of the resulting cerium-aluminates

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh nauk, no. 11, 1962, 1905 - 1910

TEXT: Mixtures of CeO_2 and Al_2O_3 were heated to 1000 - 1750°C in H_2 or NH_3 atmosphere. The CeO_2 was reduced to Ce_2O_3, which reacted with the Al_2O_3. The component ratio was varied between Ce_2O_3 : Al_2O_3 = 8 : 1 and 1 : 14. The resulting products were subjected to a thermogravimetric oxidative analysis; the polymorphic conversions and the melting points in H_2 atmosphere were investigated with a high-temperature microscope; and the powder patterns of the compounds were recorded. Results: (1) From the equimolar Ce_2O_3 + Al_2O_3 mixture, the compound $CeAlO_3$ was synthesized after 2 hrs

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heating at 1650°C; this compound crystallizes cubically, has a lattice constant a = 3.78 Å, specific gravity 6.17, N_m = 2.02, mean birefringence (~0.01), m.p. in H_2 atmosphere 2075 ± 25°C. In mixtures of particle size <5μ, $CeAlO_3$ already formed at 1000°C. When heated in air to 1200°C, this compound disintegrates into CeO_2 and Al_2O_3 within 1 hr. Polymorphic conversions of $CeAlO_3$ were observed at 90 ± 20 and 980 ± 20°C. Transition from rhombic to rhombohedral, and further to cubic lattice is assumed, but further x-ray studies are required to clarify the crystal structures. (2) In the mixture $1Ce_2O_3 \cdot 8Al_2O_3$, the compound $Ce_2O_3 \cdot 11Al_2O_3$ was found after 3 hrs at 1670°C. Mixtures of ratio 1 : 12, 1 : 14 contained α-Al_2O_3 as well. The compound $Ce_2O_3 \cdot 11Al_2O_3$ has the structure of β-alumina, and melts in H_2 atmosphere at 1950 ± 25°C; specific gravity 4.07, N_m = 1.80, weak birefringence. Heating in air at 1450°C leads to complete oxidation within 1 hr. Electrical properties at 295°K are: tan ϑ = $37 \cdot 10^{-4}$, ε = 16 at 71 kc/sec; tan ϑ = $34 \cdot 10^{-4}$, ε = 17 at 710 kc/sec. At room temperature

High-temperature reactions between... S/062/62/000/011/001/021
B101/B144

$Ce_2O_3 \cdot Al_2O_3$ does not oxidize in air, and is resistant to acids. Concentrated hydrofluoric acid showed no corroding action after 30 days. There are 7 figures and 3 tables. The most important English-language references are: S. J. Schneider, R. S. Roth, I. L. Waring, J. Res. Nat. Bur. Standards, 65A, N 4, 345 (1961); R. S. Roth, S. Hasko, J. Amer. Ceram. Soc., 41, no. 4, 146 (1958).

ASSOCIATION: Institut khimii silikatov Akademii nauk SSSR (Institute of Silicate Chemistry of the Academy of Sciences USSR)

SUBMITTED: April 2, 1962

Card 3/3

LEONOV, A.I., inzh.; NUSINOV, M.D., inzh.; MAYZEL', M.M., doktor tekhn. nauk, prof.

Approximation method for analyzing the filling up of a narrow circular slit with a viscous elastic material. Nauch. trudy MTILP no.24:188-193 '62. (MIRA 16:7)

1. Kafedra avtomatiki Moskovskogo tekhnologicheskogo instituta legkoy promyshlennosti.
(Rheology)

IOFFE, V.A.; LEONOV, A.I.; YANCHEVSKAYA, I.S.

Nature of the high dielectric permeability of cerium aluminates of a perovskite-type structure. Fiz.tver.tela 4 no.7:1788-1795 Jl '62. (MIRA 16:6)

1. Institut khimii silikatov AN SSSR, Leningrad.
(Cerium aluminate) (Dielectric constants)

38095
S/040/62/026/003/019/020
D407/D301

24 4[illegible]
10.0200

AUTHOR: Leonov, A.I. (Moscow)

TITLE: Slow steady flow of a viscous fluid past a porous sphere

PERIODICAL: Prikladnaya matematika i mekhanika, v. 26, no. 3, 1962, 564 - 566

TEXT: Steady axisymmetric flow of an incompressible viscous fluid past a sphere of radius a and thickness $\delta \leq a$, is considered. Spherical coordinates, r, φ, ϑ are used. The conditions at infinity are

$$v_r = -U \cos\vartheta, \quad v_\vartheta = U \sin\vartheta, \quad r \to \infty, \tag{1}$$

where U is the flow-velocity at infinity. The problem is solved in the Stokes approximation. The stream function has the form

$$\Psi = \sin^2\vartheta\,(Ar^4 + Br + Cr^2 + E/r) \quad (A, B, C, E = \text{const.}) \tag{5}$$

The flow in the exterior of the porous sphere is considered. The continuity equation and conditions (1) are satisfied if

[illegible] is con-
[illegible] with constant ve-
[illegible]. Thereby the formulas for
[illegible] the drag remain unchanged. The para-

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Slow steady flow of a viscous ... S/040/62/026/003/019/020
D407/D301

meter s is determined by experiment. There is 1 figure.

SUBMITTED: January 19, 1962

Card 3/3

L 38511-65 EPR/EWA(c)/EWT(m)/EWP(b)/T/EWP(t) Ps-4 IJP(c) JD/JG/GS

ACCESSION NR: AT5007726 S/0000/63/000/000/0095/0103

AUTHOR: Leonov, A. I.

TITLE: Synthesis of cerium silicates and aluminates and their properties

SOURCE: AN SSSR. Institut khimii silikatov. Silikaty i okisly v khimii vysokikh temperatur (Silicates and oxides in high-temperature chemistry). Moscow, 1963, 95-103

TOPIC TAGS: cerium silicate, cerium aluminate, rare earth compound, cerium compound stability, solid solution

ABSTRACT: The purpose of the work was to study the valence of cerium, as well as the interaction of cerium compounds with compounds of other rare earths and the influence of the gaseous medium and temperature on the stability of cerium compounds. Solid-phase reactions were studied in the systems Ce_2O_3-SiO_2 and Ce_2O_3-Al_2O_3 by means of gravimetric oxidation analysis using an electronic microbalance. The following compounds were synthesized: $Ce_2O_3 \cdot SiO_2$, $Ce_2O_3 \cdot 2SiO_2$, $Ce_2O_3 \cdot Al_2O_3$, and $Ce_2O_3 \cdot 11Al_2O_3$. It was found that the stability of trivalent cerium increases as its concentration in the solid solutions decreases. The influence of the gas-

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L 38511-65

ACCESSION NR: AT5007726

eous medium and temperature on the stability of the solid solutions ($xCe_2O_3 \cdot 2SiO_2$, $yLn_2O_3 \cdot 2SiO_2$) and ($xCeAlO_3$, $yLnAlO_3$) where Ln = La, Nd, Sm was also investigated. Orig. art. has: 9 figures.

ASSOCIATION: None

SUBMITTED: 0000063 ENCL: 00 SUB CODE: IC

NO REF SOV: 004 OTHER: 000

Card 2/2 mb

S/062/63/000/001/002/025
B101/B186

AUTHOR: Leonov, A. I.

TITLE: Valence of cerium in synthetic and natural cerium aluminates and silicates. Communication I. Compounds of the perovskite group

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh nauk, no. 1, 1963, 8-13

TEXT: The valence of cerium in compounds of the perovskite group, its interaction with other rare-earths and the effect of gaseous medium and temperature on the stability of cerium aluminates were studied. Solid solutions of the $CeAlO_3$ - $LaAlO_3$ system were synthesized from CeO_2, La_2O_3 and Al_2O_3 in reducing atmosphere (H_2, NH_3, CO) at 1200-1650°C, the $CeAlO_3$:$LaAlO_3$ ratio being 3:1, 1:1 or 1:3. X-ray analysis revealed that this system forms a continuous series of solid solutions with lattice constants changing only slightly owing to the almost equal ionic radii of

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S/062/63/000/001/002/025
B101/B186

Valence of cerium in synthetic ...

La^{3+} and Ce^{3+}. When heated at 1200°C in oxidizing atmosphere, pure $CeAlO_3$ decomposed completely within 1 hr; at this temperature in the solid solution ($CeAlO_3$, $LaAlO_3$) 11% $CeAlO_3$ decomposed within 24 hrs, at 1400°C 21% within 1 hr. The solid solution ($CeAlO_3$, $3LaAlO_3$) did not decompose at 1200 and 1400°C. X-ray analysis showed that on heating in air free CeO_2 forms at 1400°C. Synthesis of a solid solution by heating $2CeO_2 + 4Al_2O_3 + 3La_2O_3$ at 1550°C in air revealed that with increasing heating time the CeO_2 lines in the x-ray pattern became weaker and disappeared finally. The same tests were made with the $CeAlO_3$ - $SmAlO_3$ system which was less stable than the La-containing system: at 1200°C 13% $CeAlO_3$ decomposed after 24 hrs in the solid solution ($CeAlO_3$, $SmAlO_3$), at 1400°C 37% $CeAlO_3$ was decomposed after 1 hr. The solid solution ($CeAlO_3$, $3SmAlO_3$) did not decompose. Conclusion: The stability of Ce^{3+} increases when its concentration in the solid solution decreases. In oxidizing atmosphere, solid solutions containing 25-30 mole% $CeAlO_3$

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are still stable at 1400-1550°C, whereas pure $CeAlO_3$ decomposes already at 1200°C. Hence solid solutions with higher $CeAlO_3$ concentrations must be synthesized in reducing atmosphere. By comparing the x-ray patterns of ceralite, a mineral detected in slags by A. V. Rudneva, T. Ya. Malysheva (Dokl. AN SSSR, 136, no. 1, 191 (1961); 141, no. 6, 1423 (1961)) to which the formula $(Ca^{2+}Ce^{4+})Al^{3+}(O^{2-}F^{-})_3$ was attributed, and of $CeAlO_3$ and by studying the behavior of ceralite at 1200°C in oxidizing atmosphere it was shown that Ce in ceralite is trivalent and forms a $CeAlO_3$ compound of the perovskite type. The formula must be corrected to $(Ca^{2+}Ce^{3+})Al^{3+}(O^{2-}F^{-})_3$. There are 7 figures and 2 tables.

ASSOCIATION: Institut khimii silikatov im. I. V. Grebenshchikova Akademii nauk SSSR (Institute of Silicate Chemistry imeni I. V. Grebenshchikov of the Academy of Sciences USSR)

SUBMITTED: May 10, 1962

L 10141-63 EPA(b)/EWT(1)/BDS/T-2--AFFTC/ASD--Pd-4

ACCESSION NR: AP3000896 S/0179/63/000/002/0160/0162

AUTHOR: Leonov, A. I. (Moscow)

57

TITLE: On the slow flow of a viscous liquid in a tube with porous walls.

SOURCE: AN SSSR. Izv. Otk. tekh. nauk. Mekhanika i mashinostroyeniye, no. 2, 1963, 160-162

TOPIC TAGS: tube with porous walls, well with porous walls, atomization of liquid, spraying of liquid, injection well, petroleum recovery, permeability, filtration

ABSTRACT: This theoretical paper investigates the axially-symmetrical stationary problem of a vertical cylindrical well, closed at the bottom end and equipped with a porous lining. This type of problem arises in the finely-divided spraying of a liquid in chemical processes and also in the injection of a liquid into an oil-bearing layer in petroleum recovery. The problem is attacked by setting up the infiltration equations and the approximate equation of the hydrodynamics of a

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L 10141-63
ACCESSION NR: AP3000896

viscous liquid in such a manner that the velocity vector and the pressure vector are continuous in the transition through the porous wall. In the practically important case in which the permeability coefficient is extremely small, the method formulates simple approximate expressions for the distribution of pressure and velocities in the flow region. It is shown that these formulas are exact solutions of the Stokes equations if it is assumed, by way of boundary conditions, that the filtration velocity at the porous wall is constant and the longitudinal velocity goes to zero. In addition to the assumption of a closed bottom end of the vertical well it is assumed that the longitudinal-velocity distribution at the well mouth is parabolic, that the pressure acting on the outer radius of the well is constant, that the permeability of the porous medium is constant, and that the gravity forces can be disregarded. The following tow conclusions are stated: (1) If the flow of the viscous liquid in a vertical tube with a porous wall and a closed bottom end is slow, then it is permissible to assume, with a high degree of accuracy, that the velocity of permeation is constant along the length of the tube; (2) for tubes used in the injection of a liquid into a layer for not exceedingly deep wells (length not to exceed 10 km) it is permissible to regard the pressure acting on the well wall as constant, just as it is in calculations made by filtration theory. There are 16 numbered equations and 1 figure.

ASSOCIATION: none

SUBMITTED: 11May62	DATE ACQ: 12Jun63	ENCL: 00
SUB CODE: AM,FL,EL	NR REF SOV: 001	OTHER: 001

Card 2/2

L 16110-65 EWT(m)/EWP(t)/EWP(b) ESD(t)/ESD(gs)/SSD/AFWL/IJP(c) JD/JG

ACCESSION NR: AP4045833 S/0062/63/000/012/2084/2089

AUTHOR: Leonov, A. I.

TITLE: Cerium valence in synthetic and natural cerium aluminates and silicates Report No. 2. Cerium silicates

SOURCE: AN SSSR. Izv. Seriya khimicheskaya, no. 12, 1963, 2084-2089

TOPIC TAGS: cerium valence, cerium silicate, cerium aluminate, trivalent cerium, tetravalent cerium, cerium silicate solid solution, neodymium, lantanum, rare earth silicate, Tsephtosil, solid solution stability, reducing atmosphere, oxidizing atmosphere, Ce silicate dissociation, dissociation temperature

ABSTRACT: The naturally occurring cerium silicates are enumerated; these contain cerium and other rare earth elements in the 3-valent state. The author studied conditions of synthesis and properties of cerium silicates and their solid solutions in silicates of other rare earth elements, as well as the influence of temperature and of the gaseous medium on their stability, using as starter ma-

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terial CeO_2, Nd_2O_3, La_2O_3 and SiO_2. An artificial cerium mineral, Tsephtosil, the oxyfluoride of a calcium and rare earths orthosilicate, was also studied. Synthesis was conducted in a reducing (H_2, NH_3, CO) or an oxidizing (air) gaseous medium in the 1000-1600 C range. Results showed that a continuous series of solid solutions could be formed under reducing atmosphere (80-25% $Ce_2O_3 \cdot 2SiO_2$) in the systems $Ce_2O_3 \cdot 2SiO_2$--$Nd_2O_3 \cdot 2SiO_2$ and $Ce_2O_3 \cdot 2SiO_2$--$La_2O_3 \cdot 2SiO_2$; this is characteristic for the rare earth elements of the lantanum subgroup. Roentgenograms are presented of the various solid solutions. In an oxidizing gaseous medium, limited stability was observed. The Ce silicate started to dissociate at 900-1000C into CeO_2 and SiO_2, and the solid solution began to split around 1000C, but returned to the initial solid solution state between 1400-1600C, except for mixtures containing less than 50% $Ce_2O_3 \cdot 2SiO_2$ which were stable in air throughout the temperature range. The dissociation of solid cerium silicate solutions in air (1000-1400C) is specific, due to the chemical affinity of 3-valent cerium to oxygen. The similar behavior of La and Nd towards Ce, despite the difference in the formers' radius size, is noted. The synthetic mineral was also synthesized and subjected to investigation under heating. Its chemical composi-

L 16110-65

ACCESSION NR: AP4045833

tion is presented. It was found to also contain Ce in the 3-valent state; CeO_2 could be detected only after dissociation. Orig. art. has: 8 figures and 1 table.

ASSOCIATION: Institut khimii silikatov Akademii nauk SSSR (Institute of Silicate Chemistry, Academy of Sciences, SSSR)

SUBMITTED: 18Aug62 ENCL: 00

SUB CODE: GC, IC NO REF SOV: 004 OTHER: 001

Card 3/3

SHISHKIN, O.P.; GRACHEV, B.A.; LEONOV, A.I.

Power of a signaling device using drill pipe as a galvanic circuit. Izv. vys. ucheb. zav.; neft' i gaz 6 no.2:93-97 '63. (MIRA 16:5)

1. Groznenskiy neftyanoy institut i Groznenskiy filial Vsesoyuznogo nauchno-issledovatel'skogo i proyektno-konstruktorskogo instituta kompleksnoy avtomatizatsii neftyanoy i gazovoy promyshlennosti.
(Oil wells--Equipment and supplies)

GRACHEV, B.A.; LEONOV, A.I.

Telemetering the rotation speed of a turbodrill shaft.
Neft.khoz. 41 no. 1:19-23 Ja '63. (MIRA 17:7)

L 13831-63 EPR/EWP(j)/EPF(c)/EWT(m)/BDS AFFTC/ASD Ps-4/Pc-4/Pr-4 RM/WW

ACCESSION NR: AP3003561 S/0020/63/151/002/0380/0383

AUTHORS: Malkin, A. Ya.; Leonov, A. I.

TITLE: Instability criteria for shear strains of elasto-viscous polymer systems

SOURCE: AN SSSR. Doklady, v. 151, no. 2, 1963, 380-383

TOPIC TAGS: shear strain, similarity theory, Reynolds number, homochronous number

ABSTRACT: The instability of flow and the manifestation of disturbances are analyzed by the method of similarity theory. A system of criteria (Reynolds number, homochronous number, Reynolds elastic number) is thus obtained which characterizes the deformation process of elasto-viscous media. When the Reynolds elastic number exceeds a certain critical value, the current ceases to be stable in relation to an arbitrary small disturbance in flow. "The authors express their recognition to G. V. Vinogradov for directing this work and to Academician V. A. Kargin for its evaluation." The paper was presented by Academician V. A. Kargin on 4 February 1963. Orig. art. has: 10 formulas and 1 figure.

Association: Inst. of Petrochemical Synthesis, Academy of SciencesSSSR

Card 1/2

ACCESSION NR: AP4044722 S/0207/64/000/004/0078/0090

AUTHOR: Leonov, A. I. (Moscow)

TITLE: Thixotropy theory of viscoelastic media with continuous relaxation time distribution

SOURCE: Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, no. 4, 1964, 78-90

TOPIC TAGS: viscoelasticity, nonewtonian flow, shear stress, shear strain, thixotropic theory, stress relaxation

ABSTRACT: The phenomenological theory of thixotropic variations in deformable viscoelastic media was analyzed for the case of continuous relaxation time distributions. The method attempts to treat simultaneously the complete relaxation spectra as well as the non-Newtonian nature of viscosity in deformable polymers. For small shear rates γ and shear stress τ the following relation is given $\tau(t) = \int_{-\infty}^{t} \gamma'(\xi)\psi(t-\xi)\,d\xi$, where $\psi(t)$ is an experimentally determined relaxation function defined by $\psi(t) = \int_{0}^{\infty} N(s)e^{-t/s}\,ds$, where $N(s)>0$ is related to

ACCESSION NR: AP4044722

relaxation spectra). The concept of s-element is introduced with Hooks modulus $N(s)ds$, viscosity $N(s)ds/s$, stress $\tau_s(t)ds$ (commonly used in microelement media), and from the mathematical expression describing the principle of rupture-restitution

$$\tau(t) = \int_{S(t)}^{\infty} N(s)\,ds \int_{-\infty}^{t} \gamma'(\xi) e^{-s(t-\xi)} d\xi$$

$$\frac{1}{2} N(S(t)) \left(\int_{-\infty}^{t} \gamma'(\xi) e^{-S(t)(t-\xi)} d\xi \right)^2 = |E_{s\Phi}|_{s=S(t)} .$$

An equation is derived for one-dimensional thixotropic deformation of viscoelastic fluids

$$\tau(t) = \int_{S(t)}^{\infty} N(s)\,ds \int_{-\infty}^{t} \gamma'(\xi)\, e^{-s(t-\xi)} d\xi ,$$

$$\varphi(S(t)) = S(t) \int_{-\infty}^{t} |\gamma'(\xi)| e^{-S(t)(t-\xi)} d\xi .$$

Several particular solutions are then obtained for a given $\gamma'(t) > 0$ corresponding to the conditions: 1) constant deformation rate $\gamma'(t) = J(t)\gamma_0'$, $\gamma_0' = \text{const} > 0$ where J=unit Heaviside function; and 2) stress relaxation condition $\gamma'(t) = \gamma_0' J(t_1 - t)$ first, with suddenly applied constant deformation, then for stress relaxation

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ACCESSION NR: AP4043347 S/0181/64/006/008/2314/2321

AUTHORS: Ioffe, V. A.; Leonov, A. I.; Razumeyenk, M. V.

TITLE: Investigation of the dielectric constant and losses in some solid solutions based on cerium aluminate

SOURCE: Fizika tverdogo tela, v. 6, no. 8, 1964, 2314-2321

TOPIC TAGS: cerium alloy, aluminate, rare earth compound, dielectric constant, dielectric loss, solid solution, frequency shift, temperature dependence

ABSTRACT: This is a continuation of earlier work (FTT, v. 4, 1777, 1962) and is aimed at further explanation of the causes of the high dielectric constant of $CeAlO_3$ and the anomalous temperature dependence of its dispersion. To this end, the complex dielectric constant of aluminates of rare-earth elements with perovskite

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ACCESSION NR: AP4043347

structure and of a few solid solutions based on cerium aluminate were measured. Some samples exhibited an anomalous shift of the maximum of the imaginary part of the dielectric constant with change in temperature. The following conclusions are drawn: 1. Aluminates of rare-earth elements with perovskite structure, whose rare-earth ions are stable in the trivalent state, have a frequency-independent dielectric constant like all ionic crystals. 2. Praseodymium aluminate has a higher dielectric constant, which is probably due to the tendency of the praseodymium ion to assume a tetravalent state. Cerium aluminate with up to 0.1% of samarium aluminate or europium aluminate added has a low frequency-independent dielectric constant, probably because the Sm and Eu ions, which have a tendency to assume a divalent state, trap the electrons from the Ce^{3+} and inhibit the formation of defects that cause the high dielectric constant of $CeAlO_3$. The anomalous shift of the frequency maximum of the complex component of the dielectric constant with change in

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ACCESSION NR: AP4043347

temperature, observed in $CeAlO_3$ and some solid solutions on its base, cannot be likened to any of the polarization and loss properties considered normally in the theory of dielectrics. Orig. art. has: 7 figures and 1 table.

ASSOCIATION: Institut khimii silikatov im. I. V. Grebenshchikova AN SSSR Leningrad (Institute of Chemistry of Silicates, AN SSSR)

SUBMITTED: 12Feb64

ENCL: 00

SUB CODE: IC, EM

NR REF SOV: 001

OTHER: 002

Card 3/3

ACCESSION NR: AP4043361 S/0181/64/006/008/2405/2410

AUTHOR: Ioffe, V. A.; Leonov, A. I.; Razumeyenko, M. V.

TITLE: Nonlinear properties of cerium aluminate

SOURCE: Fizika tverdogo tela, v. 6, no. 8, 1964, 2405-2410

TOPIC TAGS: cerium alloy, aluminate, dielectric constant, polarization, ferroelectricity, hysteresis

ABSTRACT: This is a continuation of earlier work by some of the authors (FTT, v. 4, 1778, 1962 and v. 6, 2314, 1964) on the high dielectric constant of some samples of $CeAlO_3$ and on the complicated nature of the processes of polarization and absorption in solid solutions on its basis. To this end, the authors investigated the dielectric hysteresis loops, the dependence of the reversible dielectric constant on the bias field intensity, and the electric conductivity in weak and strong fields, using samples of $CeAlO_3$ and

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ACCESSION NR: AP4043361

some solid solutions on its basis. The dielectric hysteresis loops were investigated with apparatus similar to that of Sawyer and Tower. The oscillograms were photographed and calculated using a conventional procedure. Samples with low dielectric constant and ordinary temperature dependence of the components of the dielectric constant displayed no hysteresis. Samples with anomalous properties, such as those described by the authors earlier, did show hysteresis loops which increased with increasing field intensity and became more rectangular. Attempts to compensate for the hysteresis loop were unsuccessful, and the polarization did not reach saturation up to breakdown values of the field. No change in the dielectric constant was observed after application of a bias field. The electric conductivity of the samples was shown to have an exponential dependence on the field intensity. The hysteresis loops are shown to be due to nonlinear relationship between the electric conductivity and the field intensity, rather than to ferroelectric properties of $CeAlO_3$. Orig. art. has: 6 figures.

Card 2/3

ACCESSION NR: AP4043361

ASSOCIATION: Institut khimii silikatov AN SSSR, Leningrad
(Institute of Chemistry of Silicates, AN SSSR)

SUBMITTED: 27Feb64 ENCL: 00

SUB CODE: SS NR REF SOV: 002 OTHER: 010

Card 3/3

ACCESSION NR: AP4022723 S/0020/64/155/002/0406/0409

AUTHOR: Leonov, A. I.; Vinogradov, G. V.

TITLE: Rheology of polymers. Theory of tixotropy

SOURCE: AN SSSR. Doklady*, v. 155, no. 2, 1964, 406-409

TOPIC TAGS: tixotropy theory, polymer rheology, rheology, polymer relaxation spectrum, plastics, viscoelastic property

ABSTRACT: The paper presents an approach to the theory of tixotropy which differs from those given by other authors (see S. J. Hahn, T. Ree and H. Eyring, J. Chem. Phys. 51, 856 (1959)) and which considers the phenomenon as a reversible (with respect to time) change of structure and of properties of systems under the influence of external (for instance, mechanical) interactions. The viscoelastic properties of tixotropic systems is described by a model consisting of Maxwellian elements in parallel, and is characterized by a relaxation function which gives the relaxation spectra and its change with time. The developed the-

Card 1/2

ACCESSION NR: AP4022723

ory agrees qualitatively with the experiments (G. V. Vinogradov, I. M. Belkin, and V. A. Kargin, DAN 148, #2, 309 (1963)). Orig. art. has: 1 figure and 16 equations.

ASSOCIATION: AN SSSR

SUBMITTED: 31Oct63 DATE ACQ: 08Apr64 ENCL: 00

SUB CODE: MA, CH NO REF SOV: 003 OTHER: 005

Card 2/2

L 13906-66 EWT(m)/EWP(j)/T DJ/RM

ACC NR: AP6002360 (A) SOURCE CODE: UR/0207/65/000/006/0077/0083

AUTHOR: Buyevich, Yu. A. (Moscow); Leonov, A.I. (Moscow)

45

B

ORG: none

TITLE: Theory of dry friction of rubberlike materials

SOURCE: Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, no. 6, 1965, 77-83

TOPIC TAGS: friction, rubber, polymer

ABSTRACT: Previous experimental facts indicated that when one, or even two, contacting body is a highly elastic material (polymer, rubber, etc.) the friction characteristics quite markedly differ from those for the case of slipping of ordinary elastic bodies. The present authors attempt to determine the cause and these pronounced and frequently observed differences and to construct a simple model to describe them. An examination is made of a somewhat idealized problem of dry friction with steady slipping of a rubberlike body along the surface of a crystalline elastic body. The dependence of the friction force on the rate of slip and on the physical parameters characterizing these bodies are determined. The surfaces of both bodies are considered to be smooth and clean, and the bodies themselves, homogeneous. Particular attention is devoted to the fundamental features of the phenomenon; therefore the authors when constructing and using the model make various simplifying assumptions which are nonessential from a qualitative point of view. Authors are indebted to G. I. Barenblatt

Card 1/2

I. 13906-66
ACC NR: AP6002360

for a discussion of the work. Orig. art. has: 4 figures and 12 formulas.

SUB CODE: 11 / SUBM DATE: 15Jun65 / ORIG REF: 003 / OTH REF: 002

TS

Card 2/2

LEONOV, A.I., inzh.

Investigating two systems of the impulse mechanism of an inertia torque converter. Izv. vys. ucheb. zav.; mashinostr. no. 10:69-75 '65 (MIRA 19:1)

1. Submitted June 16, 1964.

L 58704-65 EWP(e)/EWT(m)/EWP(w)/EWA(d)/EPR/T/EWP(t)/EWP(k)/EWP(z)/EWP(b)
Pf-4/Ps-4 IJP(c) JD/JG

ACCESSION NR: AP5016589 UR/0363/65/001/005/0737/0742
546.655'824 + 546.655'763 + 546.655'623

AUTHOR: Shvayko-Shvaykovskiy, V. Ye.; Leonov, A. I.; Shelykh, A. I. 39 37 B

TITLE: Electric and thermogravimetric studies of cerium titanate, chromite, and aluminate having a perovskite structure

SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materialy, v. 1, no. 5, 1965, 737-742

TOPIC TAGS: cerium titanate, cerium chromite, cerium aluminate, perovskite, semiconductor, thermogravimetric analysis, electric conductivity

ABSTRACT: The compounds were prepared by heating pressed powder mixtures of cerium dioxide and the corresponding metal oxide at 1400C (cerium titanate), 1600C (cerium chromite), and 1700C (cerium aluminate) for 3 hr. Trivalent cerium (Ce_2O_3) reacting with the oxides of titanium, chromium, and aluminum forms the following compounds: $Ce_2O_3 \cdot 3TiO_{1.8}$, $CeCrO_3$, and $CeAlO_3$. The oxidation of the three compounds on heating in air was followed thermogravimetrically, and the effect of heating on their electrical conductivity was investigated. Thermogravimetric and x-ray analyses showed that all three compounds decompose

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L 58704-65

ACCESSION NR: AP5016589

2

in air to form the free oxides (CeO_2, TiO_2, Cr_2O_3, and Al_2O_3). Cerium titanate begins to oxidize at about 260C, cerium chromite at about 600C, and cerium aluminate at about 800C. The oxidation of cerium compounds is associated with a marked change in electrical conductivity, which decreases in cerium titanate (n-type conduction) and increases in cerium chromite and aluminate (p-type conduction). Orig. art. has: 6 figures and 1 table.

ASSOCIATION: Institut khimii silikatov Akademii nauk SSSR (Institute of Silicate Chemistry, Academy of Sciences, SSSR); Institut poluprovodnikov Akademii nauk SSSR (Institute of Semiconductors, Academy of Sciences, SSSR)

SUBMITTED: 22Dec64 ENCL: 00 SUB CODE: IC, EM

NO REF SOV: 002 OTHER: 003

Card 2/2

L 16804-66 EWP(e)/EWT(m)/EPE(n)-2/EWP(t) IJP(c) JD/WW/JG/WH

ACC NR: AP6003371 (A) SOURCE CODE: UR/0363/66/002/001/0137/0144

AUTHOR: Leonov, A.I.; Andreyeva, A.B.; Keler, E.K.

ORG: Institute of Silicate Chemistry im. I.V. Grebenshchikov, Academy of Sciences SSSR (Institut khimii silikatov Akademii nauk SSSR)

TITLE: Effect of gaseous medium on the interaction between zirconium dioxide and cerium oxides

SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materialy, v. 2, no. 1, 1966, 137-144

TOPIC TAGS: zirconium compound, cerium compound, solid solution

ABSTRACT: The phase relationships in the ZrO_2-Ce_2O_3 system were studied in a reducing atmosphere. The following characteristics were established: formation of the pyrochlore-type compound $Ce_2Zr_2O_7$, and three solid solutions based on zirconium dioxide - a monoclinic (below 1000C), tetragonal (above 1000C), and cubic solid solution (from 5 to 17 mole % Ce_2O_3), stable at high temperatures; a metastable solid solution based on Ce_2O_3 and a region of immiscibility between the indicated phases were also found. Dilatometric measurements established that in the concentration range from 0 to 27 mole % Ce_2O_3 there is a reversible polymorphic transformation of zirconium

Card 1/2

UDC: 546.831-31+546.655-31

Card 2/2 MC

LEONOV, A.I.; VINOGRADOV, G.V.

Rheological relations in the motion of a visccelastic medium in a field with a constant longitudinal velocity gradient. Dokl. AN SSSR 162 no.4:869-872 Je '65. (MIRA 18:5)

1. Institut neftekhimicheskogo sinteza im. A.V.Topchiyeva AN SSSR.
Submitted November 21, 1964.

L 29847-66 EWT(m)/EWP(j)/T IJP(c) JAJ/RM

ACC NR: AP6013203 SOURCE CODE: UR/0421/66/000/002/0092/0098

AUTHOR: Leonov, A. I. (Moscow)

ORG: none

TITLE: Drawing a cylinder out of an elastic viscous fluid

SOURCE: AN SSSR. Izvestiya. Mekhanika zhidkosti i gaza, no. 2, 1966, 92-98

TOPIC TAGS: fluid viscosity, elastic fluid, Cauchy problem, tensor analysis, rheologic property

ABSTRACT: It is assumed that the rheological behavior of an incompressible elastic-viscous fluid is described by the equations:

$$p'^{ik} = 2\int_{-\infty}^{t} \psi(t-t')\frac{\partial x^i}{\partial x'^m}\frac{\partial x^k}{\partial x'^n}\dot{\gamma}^{mn}(x', t')\,dt', \quad \gamma^{mn} = {}^1/_2(\nabla^m v^n + \nabla^n v^m) \quad (1.1)$$

$$p'^{ik} = p^{ik} + g^{ik}p' \quad (1.2)$$

here p^{ik} are the components of the stress tensor; g^{ik} are the components of the fundamental metric tensor; p is the isotropic pressure; γ^{mn} are the components of the deformation rate tensor; v^m are the components

Card 1/2

of the velocity vector; ∇^n is a symbol for contravariant differentiation; x^k is a displacement function, satisfying the equation, with the Cauchy conditions

$$\frac{\partial x'^k}{\partial t} + v^m \frac{\partial x'^k}{\partial x^m} = 0, \quad x'^k(x^m, t, t')|_{t=t'} = x^k \tag{1.3}$$

It is claimed by the author that the quantitative and qualitative relationships arrived at by his solution of the above problem are of interest in investigation of the rheologic properties of melts and concentrated polymer solutions, as well as in the analysis of the industrial processes involved in the drawing of fibers. Orig. art. has: 34 formulas.

SUB CODE: 20/ SUBM DATE: 25Nov65/ ORIG REF: 003/ OTH REF: 001

Card 2/2

L 29606-66 EWT(m)/ETC(f)/T/EWP(e)/EWP(t)/ETI IJP(c) AT/WH/JH/JD/JG
ACC NR: AP6011322 (A) SOURCE CODE: UR/0363/66/002/003/0517/0523

AUTHOR: Leonov, A. I.; Andreyeva, A. B.; Shvayko-Shvaykovskiy, V. Ye.; Keler, E. K.

ORG: Institute of Silicate Chemistry im. I. V. Grebenshchikova, Academy of Sciences SSSR (Institut khimii silikatov Akademii nauk SSSR)

TITLE: High temperature chemistry of cerium in Al_2O_3, Cr_2O_3, Ga_2O_3 cerium oxide systems

SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materialy, v. 2, no. 3, 1966, 517-523

TOPIC TAGS: cerium, aluminum, chromium, gallium, oxide, cerium compound

ABSTRACT: The effect of temperature (up to 2600°C) on structural properties of mixed oxide systems composed of CeO_2 and Al_2O_3, Cr_2O_3, or Ga_2O_3 was studied in air and hydrogen atmospheres. The phase relationships in the Ce_2O_3-Al_2O_3 system are shown in fig. 1. The phase relationships in Ce_2O_3-Cr_2O_3 systems are shown in fig. 2. It was found that CeO_2 does not form chemical compounds with oxides of Al, Cr, and Ga. Above 1650°C in air atmosphere, mixtures of oxides (e. g., Ce_2O_3-Al_2O_3, Ce_2O_3-Cr_2O_3, and Cl_2O_3-Ga_2O_3) form perovskite-type compounds ($CeAlO_3$, $CeCrO_3$, and $CeGaO_3$) admixed with the corresponding starting oxides. Pure $CeAlO_3$ and $CeCrO_3$ were obtained in a reducing atmosphere. Pure cerium gallite was synthesized by fusing a mixture of CeO_2 with Ga_2O_3 and

UDC: 546.655.3+546.763+546.683+546.623

Card 1/3

L 29606-66
ACC NR: AP6011322

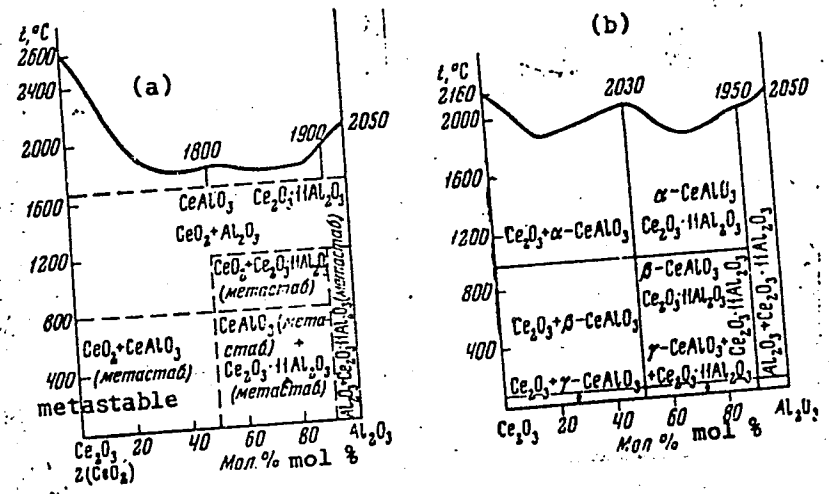

Fig. 1. a--in air; b--in hydrogen.

Card 2/3

L 29606-66

ACC NR: AP6011322

metallic Ga in a sealed evacuated ampoule. $CeAlO_3$ and $Ce_2O_3 \cdot 11Al_2O_3$ form in the

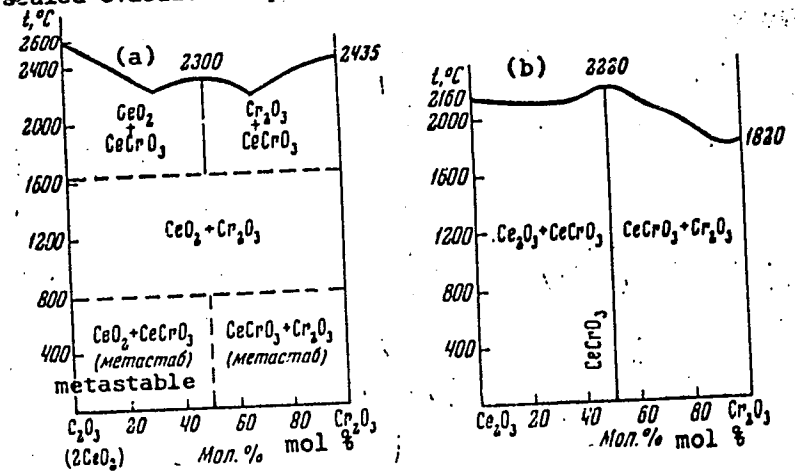

Fig. 2. a--air; b--hydrogen.

Ce_2O_3-Al_2O_3 system. Only one compound with a 1:1 ratio is formed in each of the Ce_2O_3-Cr_2O_3 and Ce_2O_3-Ga_2O_3 systems. Orig. art. has: 6 figures, 2 tables.

SUB CODE: 07/ SUBM DATE: 27Jun65/ ORIG REF: 007/ OTH REF: 005

Card 3/3 CC

L 36502-66 EWT(m)/EWP(e)/EWP(w)/T/EWP(t)/ETI IJP(c) AT/WH/JD/JG

ACC NR: AP6017873 (A) SOURCE CODE: UR/0062/66/000/005/0787/0792

AUTHOR: Leonov, A. I.; Piryutko, M. M.; Keler, E. K.

ORG: Institute of Silicate Chemistry im. I. V. Grebenshchikov, Academy of Sciences, SSSR (Institut khimii silikatov Akademii nauk SSSR)

TITLE: Effect of gaseous medium and temperature on reactions in the system Ce - Ti - O and comparison of the properties of rare earth titanates

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 5, 1966, 787-792

TOPIC TAGS: cerium compound, samarium compound, yttrium compound, titanium compound, titanate, lanthanum compound, neodymium compound, inorganic synthesis, physical chemistry property

ABSTRACT: The object of the study was to identify the chemical compounds formed in the binary mixtures In_2O_3 - TiO_2 (where In is a rare earth element) as a function of the conditions of synthesis (composition of the gas phase and temperature), and to determine the properties of these compounds. The synthesis was carried out in air, argon, carbon dioxide, hydrogen, and ammonia in the range of 20-1600°C. Phase x-ray diffraction analysis and thermogravimetric analysis on an electronic microbalance were employed. New compounds of the composition $CeO_{1.6} \cdot 2TiO_2$ (in argon and CO_2) and variable composition with a perovskite structure $(Ce_2O_3)_{1\pm x} \cdot 3TiO_2$ (in hydrogen and NH_3) were synthesized. Both compounds decompose on heating in air. The stability of cerium titanate of perovskite structure increases when it enters into a solid solution

Card 1/2 UDC: 546.65 + 546.821

Card

45226-66 TOH

ACC NR: AN6028151 SOURCE CODE: UR/9023/66/000/068/0002/0002

AUTHOR: Leonov, A. I., (Marshal, Communication troops)

38
13

ORG: none

TITLE: They wear the insignia of the communication troops

SOURCE: Sovetskiy patriot, 24 Aug 66, p. 2, col. 1-5

TOPIC TAGS: military training, military communication, radio operator, communication personnel, antiaircraft defense

ABSTRACT: Speed, space and time are the main controlling factors in military communications today. The command and staff of the communications personnel must work constantly on the move. Their equipment is therefore small and highly mobile; radio stations operate independently and also through the switchboard of the communications center. The principal tendency today is to achieve automatic control of military means of communication. Rocket troops and antiaircraft defense troops of the country and the Air Force are equipped with the latest means of communication. The author praises the work of the Voluntary Society for assisting the Army, Air Force and Navy (DOSAAF) for training youths in element-

Card 1/2

L 45222-66

ACC NR: AN6028151

ary military technical skills. Subsequent training of recruits with such a background is much easier and takes less time, and important consideration in the assembly of teams and crews. The author concludes by urging the youth to participate in DOSAAF sports and technical training activities, advising in particular attendance of radio operator courses. Orig. art. has: 1 figure. [GC]

SUB CODE: 05, 15, 17/ SUBM DATE: none/

Card 2/2 LC

L 06488-67 EWT(m)/EWP(e) WH

ACC NR: AP6028300 SOURCE CODE: UR/0363/66/002/006/1047/1054

AUTHOR: Leonov, A. I.; Keler, E. K.; Andreyeva, A. B. 36 13

ORG: Institute of Silicate Chemistry im. I. V. Grebenshchikov, Academy of Sciences, SSSR (Institut khimii silikatov Akademii nauk SSSR)

TITLE: Status of research on the systems La_2O_3-ZrO_2, Ce_2O_3-ZrO_2 and Nd_2O_3-ZrO_2

SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materialy, v. 2, no. 6, 1966, 1047-1054

TOPIC TAGS: lanthanum compound, cerium compound, zirconate, titanate, silicate, aluminate, refractory, oxide ceramic, chromium compound

ABSTRACT: Phase relationships in the systems La_2O_3-ZrO_2, Ce_2O_3-ZrO_2 and Nd_2O_3-ZrO_2 are discussed on the basis of phase diagrams and x-ray and chemical data reported in the literature. A study of the stability and oxidation resistance of the compounds $Ce_2Zr_2O_7$, $Ce_2Ti_3O_{8.4}$, $Ce_2Si_2O_7$, $CeCrO_3$ and $CeAlO_3$ at high temperatures showed that cerium zirconate is the least stable compound. Literature data on phase relationships in ceramic systems of the type Ln_2O_3-ZrO_2 indicate that the current methods of studying oxide ceramics (x-ray diffraction, microscopy, chemical phase analysis) are inadequate because they yield averaged characteristics of the structure and composition of matter. Future development of studies of zirconium refractories should involve the study of the actual structure and composition in microvolumes by methods of microauto-

Card 1/2 UDC: 666.3

L 06488-67
ACC NR: AP6028300

radiography and x-ray spectroscopy. Orig. art. has: 6 figures and 1 table.

SUB CODE: 07,11/SUBM DATE: 27Jul65/ ORIG REF: 007/ OTH REF: 012

Card 2/2 mfe

ACC NR: AP7002404 SOURCE CODE: UR/0363/66/002/012/2168/2174

AUTHOR: Leonov, A. I.

ORG: Institute of Silicate Chemistry im. I. V. Grebenshchikov, Academy of Sciences, SSSR (Institut khimii silikatov Akademii nauk SSSR)

TITLE: Role of surface phenomena in the chemical reaction kinetics, sintering, and accumulative recrystallization of refractory oxides

SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materialy, v. 2, no. 12, 1966, 2168-2174

TOPIC TAGS: sintering, recrystallization, refractory oxide, free energy

ABSTRACT: The paper examines the influence of the partial pressure of oxygen and water vapor and also impurities on the reactivity, sintering and accumulative recrystallization of oxides (Cr_2O_3, SiO_2, BeO, MgO, Al_2O_3). The conditions of the activating and inhibiting action of surface compounds during the reactions of sintering and recrystallization are analyzed. The decisive factor in the kinetics of these physicochemical processes were found to be the thermodynamic properties of the surface quasiphases (Cr_2O_{3+x}*, SiO*, $Be(OH)_2$*, $MO \cdot xH_2O$*, $MgO \cdot Al_2O_3$*). The maximum activating effect of a surface compound is reached when the compound is in a state of equilibrium (change in free energy of formation $\Delta Z=0$). When the free energy of formation of the surface compound is greater than the free energy of the reaction of sintering or re-

Card 1/2 UDC: 541.124

ACC NR: AP7002404

crystallization of the oxide, the indicated processes are inhibited. The proposed interpretation may serve as a working hypothesis in further studies of sintering, recrystallization, and chemical reactions in the solid phase. Orig. art. has: 2 figures and 4 tables.

SUB CODE: 07/ SUBM DATE: 22Feb66/ ORIG REF: 017/ OTH REF: 016

Card 2/2

LEONOV, A.I. (Chelyabinsk)

Stability and vibrations of the parallelogram-shaped pulse mechanism of an inertia torque converter. Mashinovedenie no.6:3-8 '65. (MIRA 18:11)

MALKIN, A.Ya.; LEONOV, A.I.

On the instability criteria for shear deformation processes in visco-elastic polymer systems. Dokl. AN SSSR 151 no.2:380-383 Jl '63. (MIRA 16:7)

1. Institut neftekhimicheskogo sinteza AN SSSR. Predstavleno akademikom V.A.Karginym.
(Polymers) (Deformations (Mechanics))

LEONOV, A.I.; MALKIN, A.Ya.; VINOGRADOV, G.V.

Effect of the rigidity of dynamometers on the results of rheological measurements. Koll. zhur. 26 no.3:335-340 My-Je '64
(MIRA 17:9)

1. Institut neftekhimicheskogo sinteza AN SSSR imeni Topchiyeva.

GRACHEV, B.A. (Groznyy); LEONOV, A.I. (Groznyy)

Relaying of signals using a drilling string as a communication channel with the well bottom. Avtom. i telem. 24 no.5: 692-695 My '63. (MIRA 16:6)

(Telemetering) (Remote control)
(Boring)

LEONOV, A.I. (Moskva)

Theory of the thixotropy of viscoelastic media with continuous distribution of the relaxation time. PMTF no.4:78-90 Jl-Ag '64. (MIRA 17:10)

LEONOV, A.I.

Investigating parallelogram-shaped impulse mechanisms in an inertia-type torque converter. Tyaz.mashin.i mekh. no.105/106: 43-49 '65. (MIRA 18:4)

LEONOV, A. K.

"Water Masses of the Bering Sea and its Surface Currents," No 2, pp 51-66. (Meteorologiya i Gidrologiya, No 6 Nov/Dec 1947)

SO: U-3218, 3 Apr 1953

LEONOV, A. K.

21508 LEONOV, A. K.

O vodoobmene Severnogo Ledovitogo i Tikhogo okeanogr cherez. Beringov proliv.
Trudy Vtorogo Vsesoyuz. geogr. s"yezda. T. P.M., 1948, s. 268 - 89.
Bibliogr: 27, NAZV.

SO: Letopis' Zhurnal'nykh Statey, No. 29, Moskva, 1949

LEONOV, A. K. PA 170T87

USSR/Oceanography - Topography, Submarine Dec 48

"Water Masses of the Sea of Japan," A. K. Leonov

"Meteorol i Gidrol" No 6, pp 61-79

Outlines submarine topography of the Sea of Japan. Gives water balance equation and table. Describes characteristics of water masses, e. g., temperature, salinity, etc. Submitted 26 Jun 48.

[redacted] 170T87

LEONOV, A.K.

Meteorological Abst.
Vol. 4 No. 9
September 1953
Part 2
Biblography on the
Climatology and
Marine Meteorology
of the Pacific

551.579:551.46

41-273

[']Leonov, A. K., Opyt primeneniia tsirkuliatsionnoi teorii B'erknesa dlia opredeleniia vodnogo balansa IAponskogo Moria. [Experiment in application of Bjerknes' circulation theory for the determination of the water balance of the Sea of Japan.] (In [']Leonov, A. K. (*ed.*), Pamiati IUlia Mikhailovicha SHokal'skogo. Sbornik statei. Chast' II. [In memory of IU. M. Shokal'skii. Collection of articles. Pt. II.] Moscow, 1950. p. 83–183. 56 figs., 24 tables, 34 refs.) DLC—One of the most comprehensive works on the water balance of a single sea. It is based on numerous Japanese and Soviet oceanographic expeditions. A circulation map shows a cyclonic eddy north of 39°N. Isotherms in different depths are given for a part of the North Pacific east of Japan. Current measurements and isotachs are presented for the straits and the annual course of total discharges is computed. Schematic isohyets for winter, summer and the year are based mainly on coastal stations, giving a total of 1390 km³ (1330 mm) for the year. Annual runoff from the land amounts to 212 km³. Evaporation maps are based on observations near the shore made by OKADA. These data allow different interpretations for the whole sea. The total evaporation was estimated as 900 km³ (925 mm). Finally, the seasonal variations of the water level are discussed and their connection with the varying monsoon activity shown. The oceanographer will be interested also in the detailed treatment of tides. BJERKNES' circulation theory not discussed. *Subject Headings:* 1. Water balance of seas 2. Evaporation from seas 3. Ocean currents 4. Sea of Japan.—*A.A.*

Леонов А.К.

LEONOV, A.K.

Morphological characteristics of the Bering Sea bottom. Vest. LGU 12 no.2:168-164 '57. (MIRA 11:2)
(Bering Sea--Ocean bottom)

LEONOV, A.K.

The most important results of oceanographic studies in the Pacific waters of the U.S.S.R. during 40 years [with summary in English]. Vest. LGU 13 no.6:74-90 '58. (MIRA 11:5)
(Pacific Ocean--Oceanographic research)

LEONOV, A.K.

Currents in the Sea of Japan during summer [with summary in English]. Vest.LGU 13 no.18:124-142 '58. (MIRA 12:1)
(Japan, Sea of--Ocean currents)

AUTHOR: Leonov, A.K.

12-90-3-3/16

TITLE: Some Peculiarities of the Thermal State and Currents in the Sea of Japan (O nekotorykn osobennostyakh termiki i techenii Yaponskogo morya)

PERIODICAL: Izvestiya Vsesoyuznogo Geograficheskogo Obshchestva, 1958, Vol. 90, Nr 3, pp 244 - 264 (USSR)

ABSTRACT: Shrenk's hypothesis [Ref. 1] that the western coast in the northern part of the Sea of Japan is cooled by the cold Liman current and the Sakhalin coast is warmed by the warm Japanese current, is refuted on the basis of observations carried out in 1933 by the Gosudarstvennyy gidrologicheskiy institut (State Hydrological Institute). The article deals with some conclusions on this subject, in particular, on peculiarities in the correlation between the thermal state and currents of the northern part of the Sea of Japan, where a series of factors, including the monsoon character of atmospheric circulation entail changes in the horizontal circulation of currents and in the annual movement of hydrological elements. The author comes to the conclusion, that horizontal and vertical stratification of temperatures in the northern part of the Sea of Japan are determined mainly by climatic causes and have no common features

Card 1/2

Some Peculiarities of the Thermal State and Currents in the Sea of Japan

with the temperatures of the southern part. It is also obvious that the Liman current has almost no effect on water masses in the northern part. There are 2 tables, 6 figures, 12 dynamic maps, and 6 references, 4 of which are Soviet, 1 English and 1 German.

AVAILABLE: Library of Congress

Card 2/2 1. Ocean currents-Sea of Japan 2. Liman current-Thermal effects
3. Japanese current-Thermal effects

SHOKAL'SKIY, Yuliy Mikhaylovich, zasluzh.deyatel' nauki [deceased]; ŞHVEDE, Ye.Ye., red.; SNEZHINSKIY, V.A., otv.red.; LEONOV, A.K., otv.red.; MIROHENKO, Z.I., red.; USHAKOVA, T.V., red.; BHAYNINA, M.I., tekhn.red.; FLAUM, M.Ya., tekhn.red.

[Oceanography] Okeanografiia. Izd.2. Leningrad, Gidrometeor. izd-vo, 1959. 536 p. (MIRA 12:5)

1. Pochetnyy chlen Akademii nauk SSSR, Pochetnyy prezident Geograficheskogo obshchestva Sovetskogo Soyuza (for Shokal'skiy).
(Oceanography)

LEONOV, A.K.

Water mass of the Sea of Okhotsk. Vest. LGU 14 no.24:111-119 '59. (MIRA 12:12)

(Okhotsk, Sea of--Water)

LEONOV, Aleksandr Kuz'mich; SNEZHINSKIY, V.A., otv.red.; MIRONENKO, Z.I., red.; BRAYNINA, M.I., tekhn.red.

[Regional ocianography] Regional'naia okeanografiia. Leningrad, Gidrometeor.izd-vo. Pt.1. [Bering Sea, the Sea of Okhotsk, the Sea of Japan, the Caspian Sea, and the Black Sea] Beringovo, Okhotskoe, Laponskoe, Kaspiiskoe i Chernoe moria. 1960. 764 p. (MIRA 14:1)

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Author : Leonov, A. L.

Title : Urgent problems of planning the automatization of production processes in the chemical industry

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Abstract : Criticizes lack of standardization in the use and production of automatic controllers and recorders and the tendency to select appliances which are too expensive and complex. Advises against excessive centralization of control installations at plants. Discusses problems connected with the organization of planning, faults in the design and production of instruments, and shortcomings in the exchange of technical information.